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A NEEDLE CAST OF LODGEPOLE PINE CAUSED BY THE FUNGUS HYPODERMELLA CONCOLOR

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Similarity of symptoms induced by winter injury and by a needle disease on lodgepole pine has confused a number of observers in forests in the Intermountain region. The needle disease is caused by the needle cast fungus *Hypodermella concolor*. Although the fungus is native to this country, very little has been published concerning it and the disease it causes. Most of the available information on the disease is based on observational evidence.

DISTRIBUTION

Hypodermella concolor is known in Canada from southern Alberta to northern Ontario. In the United States it has been reported from Colorado, Idaho, Montana, Oregon, and Wyoming. A few years ago the writer collected the fungus in Utah.

HOSTS

Lodgepole pine (*Pinus contorta*) and jack pine (*P. banksiana*) are the only known hosts of *Hypodermella concolor*. The pathogen has been reported attacking both species in Canada. In the United States it has been found only on lodgepole pine.

SYMPTOMS AND LIFE HISTORY

The parasite completes its life cycle in one year. Infection occurs in summer on the needles of the current season. The older needles are not attacked. There are no indications of the disease until late spring or early summer of the following season when

infected needles turn reddish brown. By midsummer those portions of the needles bearing fruiting bodies of the fungus become grayish in color. The mature fruiting bodies are short, concolorous with the affected leaf surface, and appear as shallow depressions. During late summer and fall the diseased needles are cast from the trees.

In spring the reddish colored diseased needles are easily confused with those affected by winter injury. Positive diagnosis of the cause of the damage is best made in summer when the fruiting bodies of the fungus have matured. In some years and on some areas both the disease and winter injury have been found in the same trees.

DAMAGE

Infection experiments have established Hypodermella concolor as an active parasite. The disease has been reported as epidemic at times on lodgepole pine over extensive areas in the northern Rocky Mountain region causing heavy defoliation. Trees infected for successive seasons are reduced to needles of the current season only, instead of retaining their needles from 6 to 8 years. The effect on such trees is a slowing down in growth increment. There are no reports of the fungus killing lodgepole pine.

Young lodgepole pines are usually more or less uniformly infected throughout their crowns. In older and mature trees, however, infection is generally heaviest in the lower portions of the crowns. Following repeated annual infection in such trees the foliage in the lower crowns becomes quite sparse, and in some cases branches die. Most of the remaining foliage is then found near the tops of the trees.

Environment appears to be an important factor in the occurrence of the fungus. Most severe infection areas observed are in cool valleys and at the confluence of streams where mists and fogs are common. The fungus was noted as more widespread and destructive in the Intermountain region in 1955 than in any previous year since 1950. Heavy infection areas are known on the Ashley, Boise, Caribou, and Targhee National Forests.

CONTROL

Very little research has been conducted on Hypodermella concolor. No control experiments have been undertaken and no means of controlling the disease is known.

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